

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following remarks, is respectfully requested.

Claims 1-7 and 9 are active in this application. Claims 1, 2, and 7 are amended and Claim 9 is added by the present amendment. Claim 8 stands withdrawn in response to a previous restriction requirement.

Amendments to the claims and added claims find support in the application as originally filed. Thus, no new matter is added.

In the outstanding Office Action, Claims 1, 2, and 7 were objected to; Claims 1, 4, 6, and 7 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent 6,123,176 to O'Donnell et al. (hereinafter “O'Donnell”) in view of U.S. Publication 2004/0195047 to Wang; Claim 2 was rejected under 35 U.S.C. § 103(a) as unpatentable over O'Donnell and Wang in view of U.S. Publication 2005/0133312 to Kaczmarek et al. (hereinafter “Kaczmarek”); Claim 3 was rejected under 35 U.S.C. § 103(a) as unpatentable over O'Donnell and Wang in view of U.S. Publication 2004/0118638 to Delaporte; and Claim 5 was rejected under 35 U.S.C. § 103(a) as unpatentable over O'Donnell and Wang in view of U.S. Patent 6,227,334 to Yumura et al. (hereinafter “Yumura”).

Initially, Applicants and Applicants' representative gratefully acknowledge the courtesy of an interview with Examiner Chan and Supervisory Patent Examiner Benson on September 3, 2009. During the interview, differences between references in the Office Action and the claimed invention were discussed. In particular, it was discussed that the references in the Office Action fail to teach or suggest the features of amended Claim 1. Comments and claim amendments discussed during the interview are reiterated below.

Regarding the objection to the claims, Claims 1, 2, and 7 are amended as suggested in the Office Action. Accordingly, it is respectfully requested the objection to the claims be withdrawn.

Further, Applicants respectfully traverse the rejection of Claims 1, 4, 6, and 7 under 35 U.S.C. § 103(a) as unpatentable over O'Donnell and Wang.

Claim 1 is directed to an elevator apparatus that includes, in part, a detecting portion that detects a magnitude of tension of a main rope suspending a car, and a plurality of braking devices that brake ascent or descent of the car by methods that are different from each other. The elevator apparatus also includes an abnormality control device that is capable of ascertaining the magnitude of the tension based on information from the detecting portion. When the magnitude of the tension becomes abnormal, the abnormality control device selects a first one of the braking devices when the magnitude of the tension is less than a first tension magnitude threshold and selects a second one of the braking devices when the magnitude of the tension is less than a second tension magnitude threshold. The abnormality control device also outputs a braking command signal to the selected one of the braking devices.

Applicants respectfully submit that O'Donnell and Wang fail to teach or suggest each of the features of Claim 1. For example, it is respectfully submitted that O'Donnell and Wang fail to teach or suggest an abnormality control device that selects one of plural braking devices based on a magnitude of tension of a main rope.

O'Donnell describes a rope tension monitoring assembly with a plurality of sensors that produce an output corresponding to the level of tension in each of plural ropes and a controller that generates a warning signal if a sufficient deviation in the relative level of tension in the ropes is observed.¹ According to O'Donnell, the “warning signal indicates that

¹ O'Donnell at Abstract.

the ropes require inspection and/or replacement”² and “the information could be used to dispatch a service representative to inspect the ropes”³ or alternatively, “the controller 64 stores the warning signal for later review by an on-site elevator mechanic.”⁴ Thus, according to O'Donnell, when a sufficient deviation in tension is observed, a service representative is dispatched to inspect the ropes. In addition, O'Donnell describes that “[i]f the deviation exceeds a second, larger threshold, “the controller 64 will shut-down the elevator system 12.”⁵ Thus, O'Donnell merely indicates that if a larger deviation is detected, the elevator system is “shut-down.”

Accordingly, as discussed during the interview, O'Donnell is silent regarding making any selection of a braking device based on a magnitude of the detected rope tension. Thus, O'Donnell fails to select a first or second one of plural different braking devices that brake a car by different methods based on the magnitude of the tension being less than first or second tension magnitude thresholds, for example as required by Claim 1.

Further, Applicants respectfully traverse the assertion in the Office Action that it would have been obvious for one of skill in the art to have obtained the claimed invention through a combination of O'Donnell and Wang.⁶ Wang indicates that an elevator includes a first brake 42 formed at an end of a drive motor 40, and a second brake 62 that can prevent hoist ropes from slipping.⁷ In particular, Wang indicates that “the second brake 62 of the drive sheave assembly 60 can be used as a backup brake in case of a malfunction of the first brake 42.”⁸ Thus, Wang merely indicates that a second brake may be selected when a first brake malfunctions. Also, Wang is silent regarding making a selection when a rope tension

² O'Donnell at column 2, lines 20-21.

³ O'Donnell at column 2, lines 25-27.

⁴ O'Donnell at column 3, lines 47-51.

⁵ O'Donnell at column 4, lines 10-14. See also O'Donnell at column 4, lines 21-22, lines 42-45, and lines 51-52.

⁶ Office Action at page 4, lines 1-8.

⁷ Wang at paragraph [0020].

⁸ Wang at paragraph [0020].

becomes abnormal. Therefore, as discussed during the interview, Wang also fails to teach or suggest selecting one of plural different braking devices based on a magnitude of a rope tension, and Wang fails to teach or suggest making such a selection when a rope tension magnitude becomes abnormal.

Accordingly, as discussed during the interview, O'Donnell and Wang fail to teach or suggest the features of Claim 1, and for example, O'Donnell and Wang fail to teach or suggest “an abnormality control device … which, when the magnitude of the tension becomes abnormal, selects a first one of the braking devices when the magnitude of the tension is less than a first tension magnitude threshold and selects a second one of the braking devices when the magnitude of the tension is less than a second tension magnitude threshold,” as recited by Claim 1.

Claim 9 is added to recite a method of operating an elevator apparatus, and the method includes, in part, selecting a first one of a plurality of braking devices when the magnitude of the tension is less than a first tension magnitude threshold, and selecting a second one of the plurality of braking devices when the magnitude of the tension is less than a second tension magnitude threshold. Therefore, it is respectfully submitted that O'Donnell and Wang also fail to teach or suggest the features of added Claim 9 for reasons similar to those noted above with regard to Claim 1.

Therefore, it is respectfully submitted that Claims 1 and 9 patentably define over O'Donnell and Wang, and accordingly, it is respectfully requested the rejection of Claims 1, 4, 6, and 7 under 35 U.S.C. § 103(a) be withdrawn.

In addition, as discussed during the interview, amended Claim 1 also patentably defines over U.S. Patent 7,117,979 to Angst et al. (herein “Angst”), which the Examiner identified during the interview. Angst describes activating a first braking measure, and if after a short period of time of applying the first braking measure, “the speed monitoring

device 24.1 checks whether the speed limit value graph 28 is still being exceeded and activates ... a second braking measure...”⁹ Thus, according to Angst a second braking measure is applied when a first braking measure is unsuccessful at slowing down an elevator car. Therefore, as discussed during the interview, Angst also fails to teach or suggest the features of Claims 1 and 9 that are missing from the disclosure of O'Donnell and Wang.

In addition, Applicants respectfully traverse the rejections of Claims 2, 3, and 5 under 35 U.S.C. § 103(a) as unpatentable over O'Donnell and Wang in view Kaczmarek, Delaporte, or Yumura. Claims 2, 3, and 5 depend from Claim 1, which is believed to patentably define over O'Donnell and Wang as discussed above. In addition, Applicants respectfully submit that Kaczmarek, Delaporte, and Yumura also fail to teach or suggest the claimed features lacking in the disclosure of O'Donnell and Wang. Therefore, it is respectfully requested those rejections also be withdrawn.

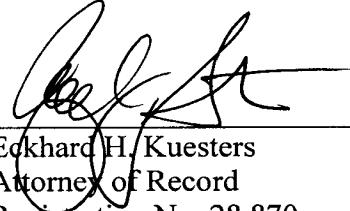
Accordingly, Applicants respectfully submit independent Claims 1 and 9, and claims depending therefrom, are allowable.

⁹ Angst at column 6, lines 10-42, and Figs. 4 and 5.

Consequently, in light of the above discussion and in view of the present amendment, this application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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